

CLAIMS

The invention is claimed as follows:

1. A positive active material comprising:

one or more particles of lithium nickelate having a surface and having a
5 formula $\text{Li}_y\text{Ni}_{1-z}\text{M}'_z\text{O}_2$ where $0.05 \leq y \leq 1.2$ and $0 \leq z \leq 0.5$, and M' is selected from the group consisting of Fe, Co, Mn, Cu, Zn, Al, Sn, B, Ga, Cr, V, Ti, Mg, Ca, Sr and mixtures thereof; and

an olivine compound having an olivine-type crystal structure and having a
formula Li_xMPO_4 where $0.05 \leq x \leq 1.2$, and M is selected from a group consisting of
10 Fe, Mn, Co, Ni, Cu, Zn, Mg and mixtures thereof;

wherein the surface of the particles of lithium nickelate are covered with the olivine compound.

2. The positive active material according to claim 1, wherein a content of the olivine compound in the positive active material ranges from about 5 wt% to about
15 50 wt%.

3. The positive active material according to claim 1, wherein the olivine compound is in the form of particles, and wherein an average particle size of the particles of the olivine compound is one-half or less as compared to an average particle size of the particles of lithium nickelate.

20 4. The positive active material according to claim 1, wherein a coating thickness of the olivine compound ranges from about 0.1 μm to about 10 μm .

5. A non-aqueous electrolyte secondary battery comprising:

a positive electrode including a positive active material;

a negative electrode containing a material selected from a group consisting of
25 metal lithium, a lithium alloy, and a material allowing lithium to be doped or undoped in or from the material; and

a non-aqueous electrolyte;

wherein the positive active material includes one or more particles of lithium nickelate having a surface and having a formula $\text{Li}_y\text{Ni}_{1-z}\text{M}'_z\text{O}_2$ where $0.05 \leq y \leq 1.2$
30 and $0 \leq z \leq 0.5$, and M' is selected from the group consisting of Fe, Co, Mn, Cu, Zn, Al, Sn, B, Ga, Cr, V, Ti, Mg, Ca, Sr and mixtures thereof; and

an olivine compound having an olivine type crystal structure and having a formula Li_xMPO_4 where $0.05 \leq x \leq 1.2$, and M is selected from the group consisting of Fe, Mn, Co, Ni, Cu, Zn, Mg and mixtures thereof;

wherein the surface of the particles of lithium nickelate are covered with the
5 olivine compound.